

AD-A143 220

NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS  
PRITCHARDS POND DAM (..(U) CORPS OF ENGINEERS WALTHAM  
MA NEW ENGLAND DIV DEC 80

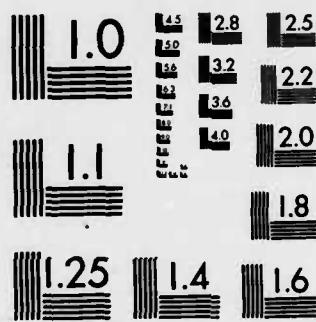
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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A143 220

DTIC ACCESSION NUMBER

II

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PHOTOGRAPH THIS SHEET

1

INVENTORY

Pritchards Pond Dam  
Rpt. No. CT 00033      Dec '80

DOCUMENT IDENTIFICATION

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AD-A143 220

PRITCHARDS POND DAM  
CT 00033

NAUGATUCK RIVER BASIN  
WATERBURY, CONNECTICUT

PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION REPORT

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

<b>REPORT DOCUMENTATION PAGE</b>		<b>READ INSTRUCTIONS BEFORE COMPLETING FORM</b>
1. REPORT NUMBER  CT 00033	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)  Pritchards Pond Dam Naugatuck River Basin, Waterbury, Conn.		5. TYPE OF REPORT & PERIOD COVERED  INSPECTION REPORT
6. NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		7. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)  U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS  DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254		12. REPORT DATE  December 1980
13. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		13. NUMBER OF PAGES  47
14. DISTRIBUTION STATEMENT (of this Report)  APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		16a. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. SUPPLEMENTARY NOTES  Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.		
18. KEY WORDS (Continue on reverse side if necessary and identify by block number)  DAMS, INSPECTION, DAM SAFETY, Pritchards Pond Dam Naugatuck River Basin Waterbury Conn.		
19. ABSTRACT (Continue on reverse side if necessary and identify by block number)  Pritchards Pond Dam is an embankment formed by Pearl Lake Road. It has a total length of 249 ft. and a maximum height of 8.7 ft. The exact age of the dam is not known but it is believed to be at least 100 yrs. old. There is a no longer functioning outlet box located on the right side of the dam that presumably controlled a 6-inch cast iron outlet pipe on the downstream side of the dam. There is a bar screen and 4 ft. wide over-flow spillway located in the center of the dam. This spillway drops down to a 15-inch pipe which outlets at the downstream side of the dam. The downstream side has a stone masonry wall along approx. 90 ft. of the dam's length, with varying heights.		

*Philip W. Genovese and Associates, Inc.*  
*Consulting and Design Engineers*

January 6, 1981

Re: Pritchards Pond Dam  
Waterbury, Connecticut  
Contract #DACW-33-81-C0017

The Department of the Army  
New England Division  
Corps of Engineers  
424 Trapelo Road  
Waltham, Massachusetts 02154

Attention: Mr. E. P. Gould, Project Management Division

Gentlemen:

We have inspected Pritchards Pond Dam and conducted a field survey. Our dam failure analysis concludes that the dam should be reclassified as having a low hazard potential.

We are including with this letter a short report substantiating our conclusions.

Very truly yours,

PHILIP W. GENOVESE & ASSOCIATES, INC.

*Pratap Z. Patel*  
Pratap Z. Patel, P.E.  
Project Manager

PZP/LH



295 Edgewood Street, Hamden, Conn. 06514 P. O. Box 4330  
Telephone 288-5678 (203) Cable GENOPHIL

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DESCRIPTION

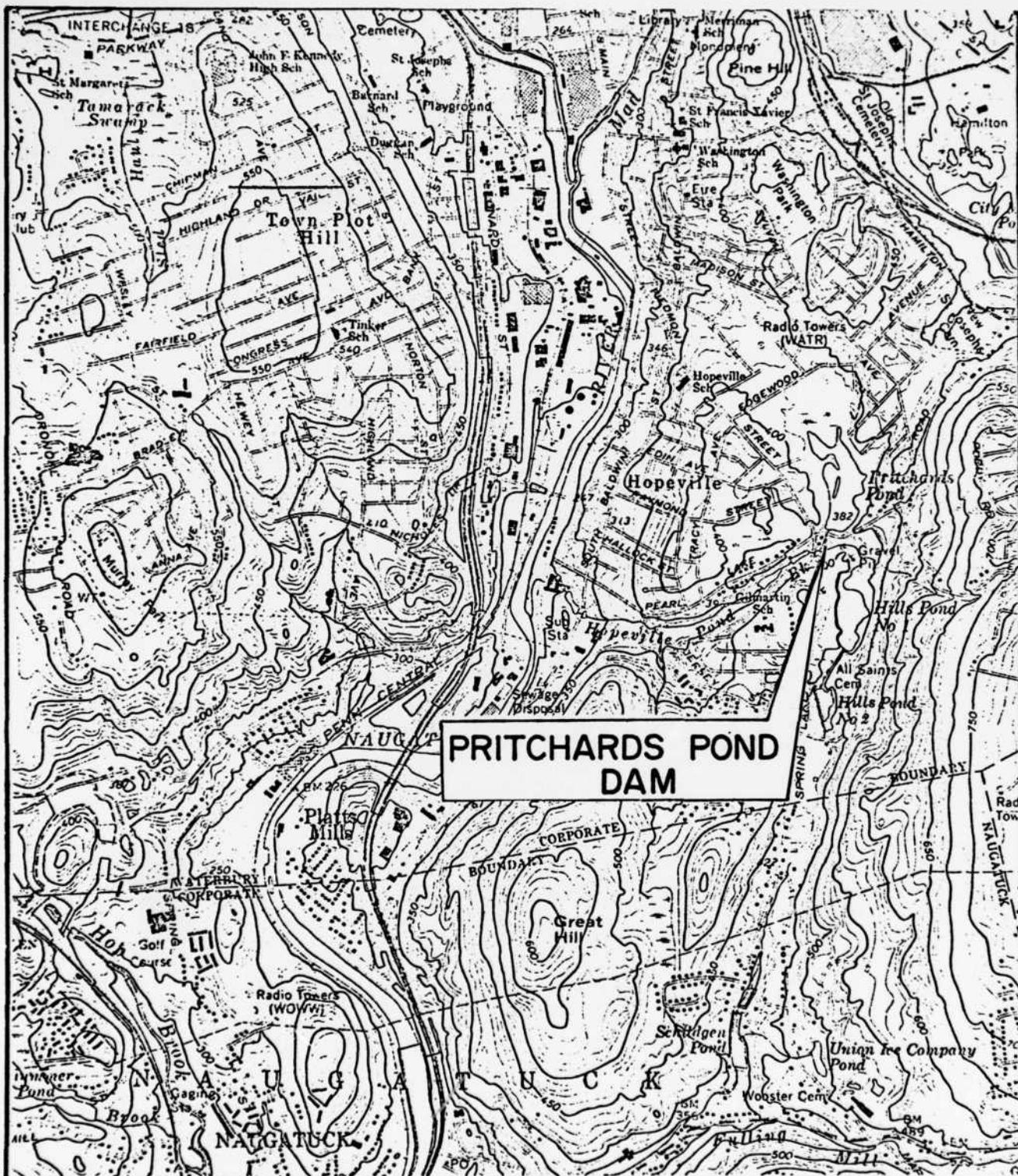
Name of Dam : Pritchards Pond Dam  
Identification Number : CT 00033  
Town : Waterbury  
County and State : New Haven County, Connecticut  
Stream : Hopeville Pond Brook  
Owner : Risdon Manufacturing Company, 2100 South Main Street,  
Waterbury, Connecticut  
Date of Inspection : December 3, 1980

↓ Pritchards Pond Dam is an embankment dam formed by Pearl Lake Road. It has a total length of 249 feet and a maximum height of 8.7 feet. The exact age of the dam is not known but it is believed to be at least 100 years old. There is a no longer functioning outlet box located on the right side of the dam that presumably controlled a 6-inch cast iron outlet pipe on the downstream side of the dam. There is a bar screen and 4 foot wide overflow spillway located in the center of the dam. This spillway drops down to a 15-inch pipe which outlets at the downstream side of the dam. The downstream side has a stone masonry wall along approximately 90 feet of the dam's length, with varying heights.

↓ The dam is owned and operated by the Risdon Manufacturing Company, 2100 South Main Street, Waterbury, Connecticut. Although it once augmented the plant's water supply, it no longer is used for that purpose. Any present uses are strictly recreational.

↓ The dam appears in good shape but requires some work. Specifically, this would include developing a functioning outlet works, spillway maintenance and removal of trees on or close to the dam.

→ [Eop. 4]



USGS QUAD  
WATERBURY, CT.



PHILIP W. GENOVESE AND  
ASSOCIATES, INC.  
ENGINEERS-HAMDEN, CT.

U.S. ARMY ENGINEER DIV.  
NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASS.

SCALE IN FEET  
0 1000 2000 3000 4000

NATIONAL PROGRAM OF INSPECTION OF  
NON-FED DAMS  
LOCATION MAP



U.S. ARMY ENGINEER DIV.  
NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASS.

PHILIP W. GENOVESE AND  
ASSOCIATES, INC.  
ENGINEERS - HAMDEN, CT.

NATIONAL  
PROGRAM  
OF  
INSPECTION  
OF  
ON-FED  
DAMS

OVERVIEW PHOTO  
DECEMBER, 1980  
PRITCHARDS POND DAM  
HOPEVILLE POND BROOK  
WATERBURY, CONNECTICUT

[From p. 1]

## HYDROLOGIC/HYDRAULIC EVALUATION

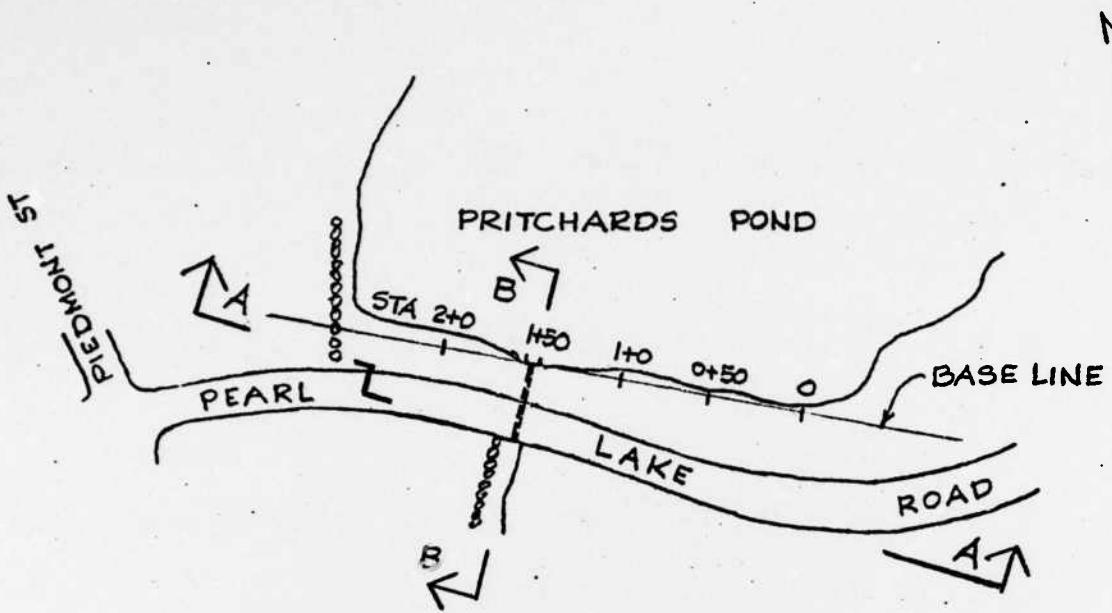
Pritchards Pond Dam has a tributary watershed of 0.25 square miles. At the spillway crest it has a water surface area of 11 acres and a storage capacity of 14 acre-feet. The storage capacity at the top of the dam is 115 acre-feet.

The pipe spillway has a capacity of 16 cfs with the water at the top of the dam. The maximum height of the dam is 8.7 feet. In accordance with the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams, Pritchards Pond Dam is a small dam based on storage capacity.

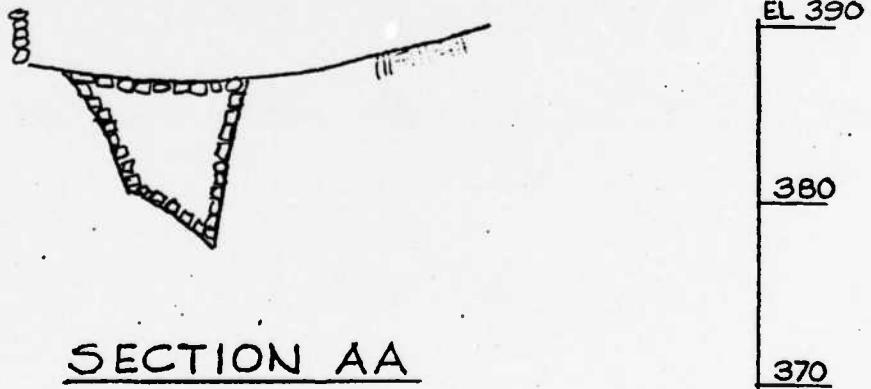
A dam breach analysis was made using the Corps of Engineers' "Rule of Thumb" guidance for estimating downstream dam failure hydrographs. The peak discharge from a dam breach, with the water level at the top of dam (elev. 386.7), was calculated to be 1200 cfs. The flood waters were routed for a distance of 3270 feet downstream.

The results of this analysis indicated that the loss of life from a failure of Pritchards Pond Dam is unlikely and therefore warrants a "low" hazard classification. Appendix D provides the detailed analysis to justify this conclusion.

**APPENDIX A**  
**SITE PLAN**



PLAN



SECTION AA

VER 0 10' 20'  
HOR 0 100' 200'

SCALE IN FEET

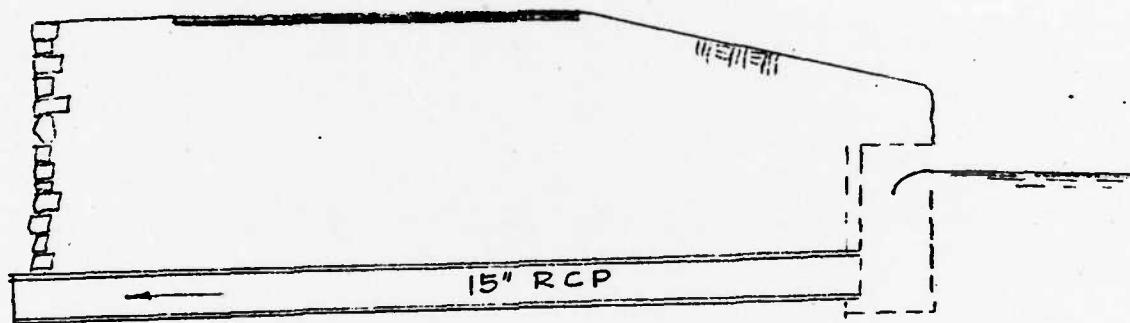
PHILIP W. GENOVESE & ASSOCIATES, INC. ENGINEERS	PRITCHARDS POND HAMDEN, CONNECTICUT	DAM (CT00033)
--	--	---------------

EL 390

380

370

PEARL LAKE ROAD



SECTION BB (STA 1+50)

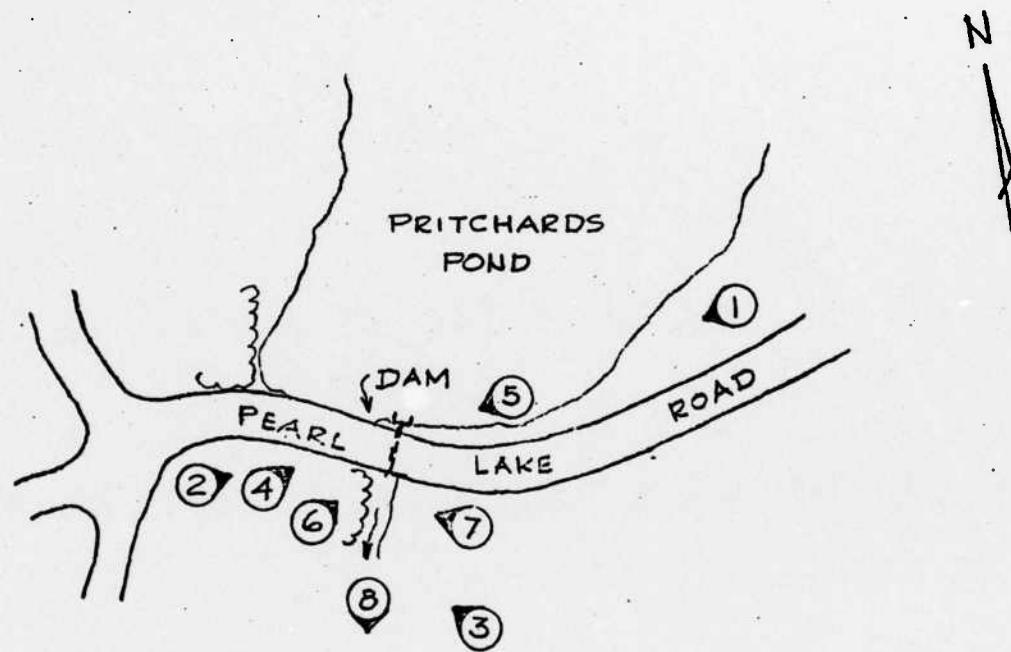
VER 0 5' 10'  
HOR 0 10' 20'

SCALE IN FEET

PHILIP W. GENOVESI & ASSOCIATES, INC.  
ENGINEERS HAMDEN, CONNECTICUT

PRITCHARDS POND DAM (CT00033)

**APPENDIX B**  
**SITE PHOTOGRAPHS**



3

REFERS TO PHOTO NUMBER,  
LOCATION AND DIRECTION

U.S. ARMY ENGINEER DIV.  
NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASS.

PHILIP W. GENOVESE AND  
ASSOCIATES, INC.  
ENGINEERS - HAMDEN, CT.

NATIONAL  
PROGRAM  
OF  
INSPECTION  
OF  
NON-FED  
DAMS

PHOTO LOCATION PLAN

PRITCHARDS POND DAM

HOPEVILLE POND BROOK

WATERBURY,

CONNECTICUT



1. Left abutment, looking along crest.



2. Right abutment, looking along downstream face.

B-2

PHILIP W. GENOVESE & ASSOCIATES, INC. ENGINEERS	HAMDEN, CONNECTICUT	PRITCHARDS POND DAM (CT00033)
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3. Downstream face of dam, looking towards right side of spillway channel. Note 14" diameter tree in right side of photo and clump of 5 trees in center of photo.



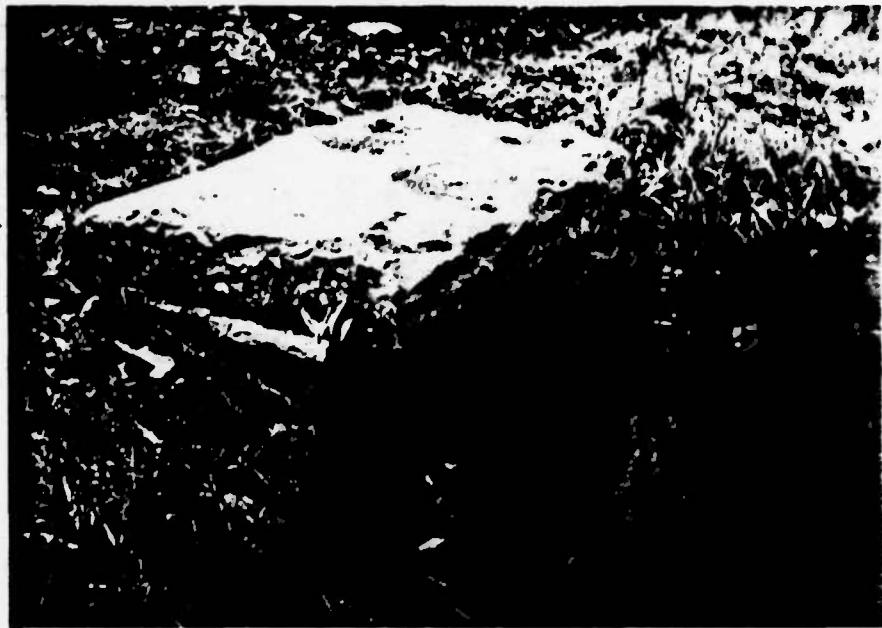
4. Sta 2+10 looking at downstream face of dam, blue flagging at Sta 2+00, tree stump on left, 8" diameter, tree on right of photo 11" diameter.

B-3

PHILIP W. GENOVESE & ASSOCIATES, INC.  
ENGINEERS

HAMDEN, CONNECTICUT

PRITCHARD'S POND DAM (CT00033)



5. Spillway intake structure with trash rack.



6. Spillway and outlet discharge pipes.

34

PHILIP W. GENOVESE & ASSOCIATES, INC. ENGINEERS	HAMDEN, CONNECTICUT	PRITCHARDS POND DAM	(CT00033)
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7. Downstream face of dam looking towards right downstream bank.



8. Downstream channel.

B-5

**APPENDIX C**  
**INVENTORY FORM**

STATE NUMBER	CONC. DIVISION	STATE, COUNTY OR CITY	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REPORT DATE
CT	33	NLD	CT 009 05	41°36'0"	73°01'6"	NOV 1981
						30 MAY 80

POPULAR NAME		NAME OF IMPOUNDMENT					
		PRITCHARDS POND					
④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
RIVER OR STREAM		NEAREST DOWNSTREAM CITY-TOWN-VILLAGE		DIST. FROM DAM (MIL.)		POPULATION	
01	07	TR NAUGATUCK RIVER	NAUGATUCK	2	236000		
⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲
TYPE OF DAM	YEAR COMPLETED	PURPOSES	FLA. HEIGHT	HYDRO-ELEC.	IMPOUNDING CAPACITIES		
HECB	1890	R	6.7 FT	3.8 FT	1/5 SEC	1/4 SEC	1/2 SEC
⑳	㉑	㉒	㉓	㉔	㉕	㉖	㉗
REMARKS							
㉘	㉙	㉚	㉛	㉜	㉝	㉞	㉟
DIS.	SPILLWAY HAS.	MAXIMUM VOLUME OF DAM (CFT)	POWER CAPACITY	NAVIGATION LOCKS			
HAS LENGTH	TYPE	DISCHARGE (FT <sup>3</sup> /SEC)	INSTALLED PROPOSED	NO	1	2	3
4.125	3.50		0	0	0	0	0
㉛	㉜	㉝	㉞	㉟	㉟	㉟	㉟
OWNER		ENGINEERING BY		CONSTRUCTION BY			
RISDON MFG CO							
㉟	㉟	㉟	㉟	㉟	㉟	㉟	㉟
DESIGN		REGULATORY AGENCY		OPERATION		MAINTENANCE	
		CONSTRUCTION					
㉟	㉟	㉟	㉟	㉟	㉟	㉟	㉟
INSPECTION BY		INSPECTION DATE		AUTHORITY FOR INSPECTION			
GENEVA ASSOCIATES INC.		DAY MO YR					
		3 26 80					
㉟		PA 571 SECT 25-11 ST OF CT					
REMARKS							
㉟	㉟	㉟	㉟	㉟	㉟	㉟	㉟

APPENDIX D  
HYDROLOGIC/HYDRAULIC CALCULATIONS

### EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

The Pritchards Pond Dam has a tributary watershed of 0.25 sq.mi and a water surface area and storage capacity at spillway level of 11 Acres and 14 Ac.Ft respectively. The maximum impoundment to the top of dam (El. 386.7 NGVD) is estimated to be 115 Ac.Ft.

The pipe spillway with drop inlet has an estimated capacity of 16 CFS with pool at top of the dam. In accordance with Table 1 of the Corps of Engineers Recommended Guidelines for Safety Inspection of Dams, the Pritchards Pond Dam is classified as "Small" in size based on storage capacity.

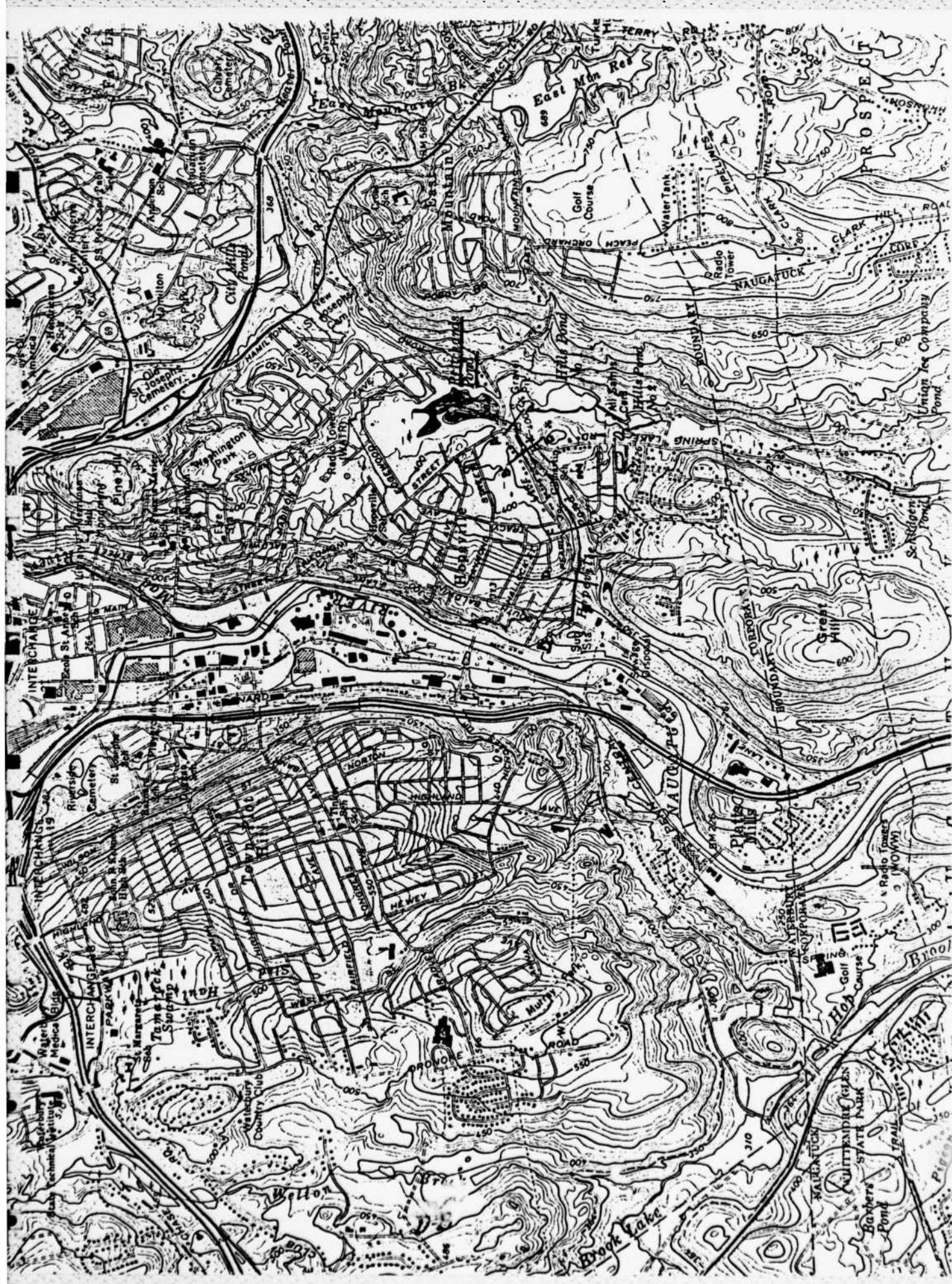
Utilizing the Corps of Engineers April 1978 "Rule of Thumb Guidance for Estimating Downstream Failure Hydrographs", the peak failure outflow due to dam breach is estimated to be 1200 cfs with an estimated flood depth of 3.8 Ft. immediately downstream of the dam. The flood routing was performed for peak failure outflow with pool at top of dam.

The estimated peak flow rates and peak flood depths at four sections downstream of the dam resulting from a dam failure are:

D/S Section (Ft. from Dam)	Flow (CFS)	Flood Depth (FT)	Velocity (fps)
At Dam	1200	3.8	-
170	1185	3.4	3.5
720	1148	6.2	4.1
2320	1032	4.1	4.25
3270	1021	3.2	3.9

Based on relative elevations of the houses in the vicinity of the Brook, none of them are likely to be flooded during dam failure except one house on Spring Lake Rd, located 3'4" above Brook bed which may have minor flooding. In addition, the culvert on Spring Lake Rd is inadequate to pass the peak flow of 1185 cfs.

Thus, loss of life from a failure of Pritchards Pond Dam is considered unlikely. Therefore, the dam is classified as "Low" hazard potential. This conclusion is based upon hydraulic/hydrologic analysis included in Appendix D.



DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 1 OF 16  
 NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/80  
PRITCHARDS POND DAM CHECKED BY FH DATE 12/17/80

FOR THE PURPOSE OF DETERMINING PROJECT SIZE, THE  
MAXIMUM STORAGE ELEV<sup>N</sup> IS CONSIDERED AT TOP OF  
THE DAM.

TOP OF DAM = EL. 386.7 NGVD \*

TOE OF DAM = EL. 378 (15" RCP OUTLET INVERT)

HEIGHT OF DAM = 8.7 FT. (40)

PLANIMETERING FROM USGS MAP FOR POND SURFACE AREAS -

AT EL. 382 (NORMAL) = 12 Ac.

AT EL. 390 = 42 Ac.

FROM STAGE- POND AREA CURVE :

POND AREA AT SPILLWAY CREST (EL. 381.8) = 11 Ac.

POND AREA AT TOP OF DAM (EL. 386.7) = 30 Ac

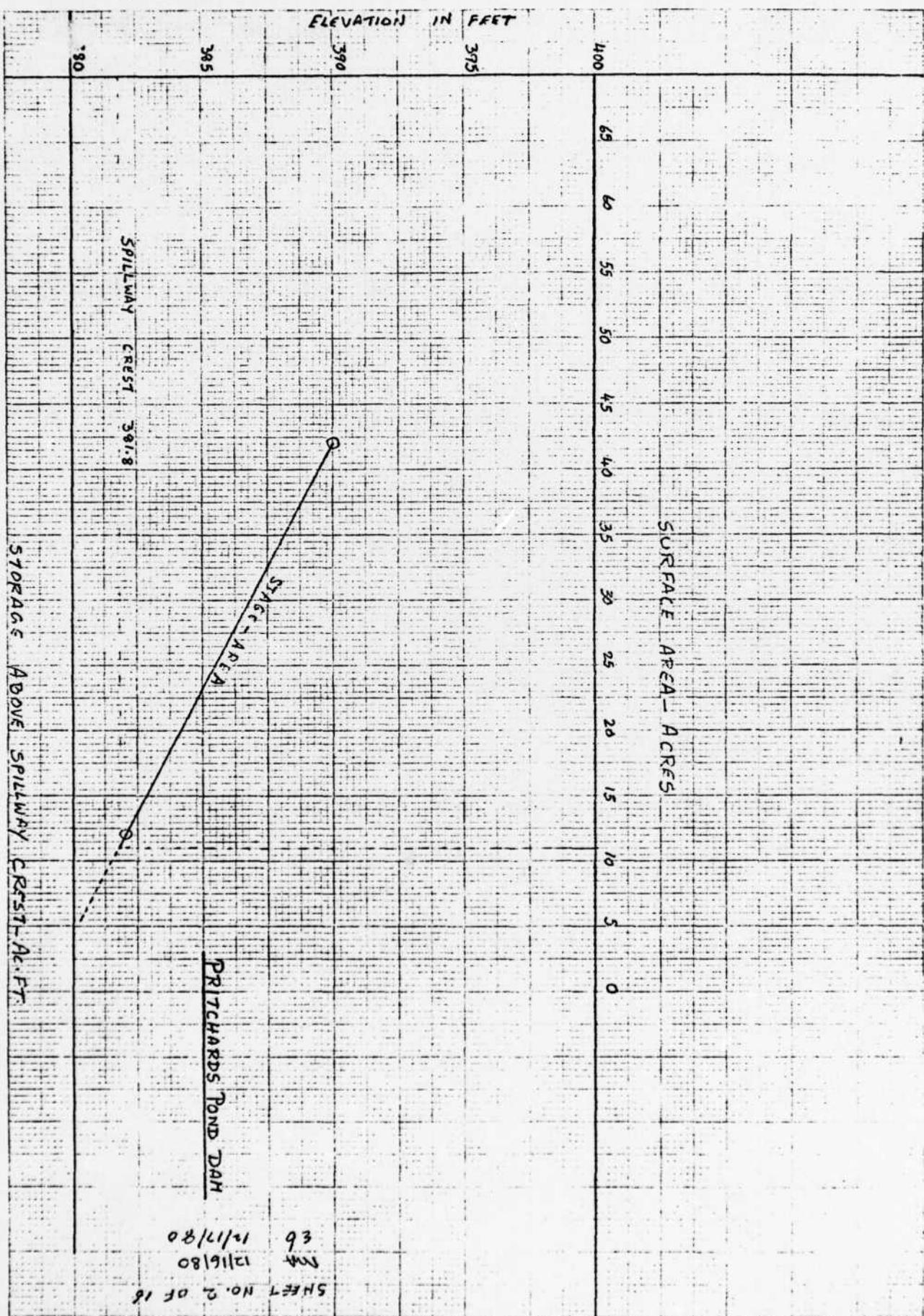
AVERAGE POND AREA BETWEEN SPILLWAY CREST &  
TOP OF DAM = 20.5 Ac.

STORAGE BETWEEN SP. CREST & TOP OF DAM =  $4.9 \times 20.5$   
= 101 Ac. FT.

ESTIMATED STORAGE BELOW SP. CREST =  $\frac{1}{3} b \cdot h$   
 $\frac{1}{3} \times 11 (381.8 - 378) = 14 \text{ Ac. FT.}$

MAX<sup>H</sup>. IMPOUNDMENT TO TOP OF DAM =  $101 + 14$   
= 115 AC. FT. (5)

\* THE WATER SURFACE ELV<sup>N</sup> OF 382 MSL FOR PRITCHARDS  
POND ON THE WATERBURY QUAD SHEET (1972) IS ASSUMED  
TO BE ON NATIONAL GEODETIC VERTICAL DATUM (NGVD).  
ALL OTHER ELEVATIONS ARE REFERENCED TO THIS  
ASSUMED ELV<sup>N</sup> AND ARE OBTAINED BASED UPON  
INFORMATION FURNISHED BY P.W. GENOVESI & ASSOCIATES.



DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 3 OF 16  
 NEW ENGLAND DIVISION COMPUTED BY SMF DATE 12/16/80  
PRITCHARD'S POND DAM CHECKED BY EB DATE 12/17/80

BREACH ANALYSIS - DOWNSTREAM FAILURE HAZARD  
 BASED UPON CORPS OF ENGINEERS "RULE OF  
 THUMB" GUIDANCE FOR ESTIMATING DIS. DAM  
 FAILURE HYDROGRAPHS

$$\text{BREACH OUTFLOW } Q_b = \frac{8}{27} \times W_b \times \sqrt{g} \times Y_0^{3/2}$$

WATER DEPTH AT TIME OF FAILURE  $Y_0 = 8.7$  FT WITH  
 POOL AT TOP OF DAM

ESTIMATED BREACH WIDTH  $W_b = 40\%$  OF MID-HT LENGTH  
 OF DAM  
 $= 0.4 \times 67'$

(MID-HT LENGTH IS BASED UPON P.W. GENOVESE &  
 ASSOC. INC'S DEC. 9, 1980 FIELD INFORMATION)

$$\therefore Q_b = \frac{8}{27} \times (0.4 \times 67) \times \sqrt{32.2} \times (8.7)^{3/2}$$

$$\approx 1200 \text{ CFS}$$

IT IS PRESUMED THAT THE BREACH OCCURS IN  
 DEEPEST SECTION OF THE DAM. THIS SECTION  
 INCLUDES THE PIPE SPILLWAY WITH DROP INLET.

∴ PEAK FAILURE OUTFLOW  $Q_{P1} = 1200 \text{ CFS}$

ESTIMATED FAILURE FLOOD DEPTH  $\approx 0.44 Y_0$   
IMMEDIATELY DIS FROM DAM  $\approx 3.8 \text{ FT.}$

DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 4 OF 16  
 NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/80  
 PRITCHARDS POND DAM CHECKED BY SL DATE 12/17/80

PERFORM DIS ROUTING OF PEAK FAILURE OUTFLOW

SECTION AA IS SELECTED 170' DIS OF THE DAM TO  
EVALUATE THE FLOOD HAZARD TO THE TWO HOUSES  
LOCATED IN BETWEEN THE BROOK AND SPRING LAKE RD.  
USING MANNING'S EQUATION.

$$Q = \frac{1.486}{m} A R^{2/3} n^{1/2} \quad \text{WHERE } m = 0.06 \text{ ASSUMED}$$

$$= 2.724 A R^{2/3} \quad \text{AND } n = 0.012 \text{ EST. FROM USGS MAP.}$$

A AND R ARE ESTIMATED BASED ON USGS MAP INFORMATION.

ELVN	A SQ.FT.	P	R	$R^{2/3}$	Q CFS
376	0	—	—	—	—
378	105	105.1	1.0	1.0	286
379	230	154.1	1.49	1.30	817
380	415	205.2	2.02	1.60	1808

FROM STAGE-AREA AND STAGE-DISCHARGE CURVES, FOR  
SECTION AA, FOR  $Q_P_1 = 1200 \text{ CFS}$ , ELVN = 379.45 AND  
AREA = 348 SQ.FT.

VOLUME OF REACH  $V_1 = \frac{170 \times 348}{43.563} \approx 1.4 \text{ AC.FT.}$

$$\text{TRIAL } Q_P_2 = Q_P_1 \left(1 - \frac{V_1}{S}\right) \text{ WHERE } S = \text{STORAGE TO TOP OF DAM}$$

$$= 1200 \left(1 - \frac{1.4}{115}\right) = 1185 \text{ CFS}$$

FOR THIS  $Q_P_2$  THE STAGE-DISCHARGE CURVE GIVES ELVN  
= 379.4 AND AREA = 342 SQ.FT.

$$\text{VOLUME OF REACH } V_2 = \frac{170 \times 342}{43.563} \approx 1.4 \text{ AC.FT.}$$

$$\therefore \text{PEAK OUTFLOW } Q_P_2 = 1185 \text{ CFS}$$

$$\text{FLOOD DEPTH AT SECTION AA} = 379.4 - 376 = 3.4 \text{ FT.}$$

$$\text{FLOOD STAGE AT SECTION AA} = 379.4 \text{ NGVD}$$

$$\text{AND VELOCITY AT SECTION AA} = \frac{1185}{342} = 3.5 \text{ FPS}$$

MA 12/16/80  
EB 12/17/80

MA 12/16/80

12/17/80

A graph showing the variation of string tension (in lbs/in) along a parabolic dam profile. The vertical axis (Y-axis) represents string tension in lbs/in, with major grid lines at 0, 100, 200, and 300. The horizontal axis (X-axis) represents distance from the dam (in feet), with major grid lines at 0, 100, 200, and 300. The curve starts at approximately (0, 250), reaches a minimum of about 150 at 150 feet, and ends at approximately (300, 250). The curve is labeled "PARABOLIC DAM PROFILE".

Distance from Dam (ft)	String Tension (lbs/in)
0	250
50	200
100	150
150	150
200	150
250	200
300	250

ELFVBR10N 12 FEB 1986 380  
310 386 384 382 380  
395

### Squares to the Inch

SHEET NO. 5 OF 16  
MA 12/16/80  
EB 12/17/80

PRITCHARD, ROBERT DAN  
STAGE - A SCENIC COVE

卷之三

A graph showing Discharge (in CFS) on the y-axis (0 to 2000) versus Section Number on the x-axis (1 to 5). The data points are as follows:

Section Number	Discharge (CFS)
1	0
2	400
3	800
4	1200
5	1600
6	2000

The graph shows a linear increase in discharge from section 1 to section 6.

SECTION 2

四〇

四

19

三

377

3764

D-6

DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 7 OF 16  
 NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/82  
 PRITCHARDS POND DAM CHECKED BY EB DATE 12/17/82

OF THE TWO HOUSES, THE HOUSE AT LOWER ELEVATION  
IS ESTIMATED TO BE 3' 4" ABOVE THE BED OF THE  
BROOK.

THUS, AT SECTION AA, NO SERIOUS FLOOD HAZARD IS  
LIKELY TO OCCUR.

IT IS HOWEVER, NOTED THAT THE CULVERT ON SPRING  
LAKE RD. IS INADEQUATE TO ACCOMMODATE THE  
ENTIRE PEAK OUTFLOW AT DAM FAILURE.

SECTION BB

THIS SECTION IS 550' BELOW SECTION AA.

USING MANNING'S EQUATION

$$Q = \frac{1.486}{n} A R^{2/3} 1/2 \quad \text{WHERE } n = 0.08 \text{ ASSUMED (SLOW MOVING)} \\ = 1.948 A R^{2/3} \quad \text{1} = 0.011 \text{ EST. FROM USGS MAP}$$

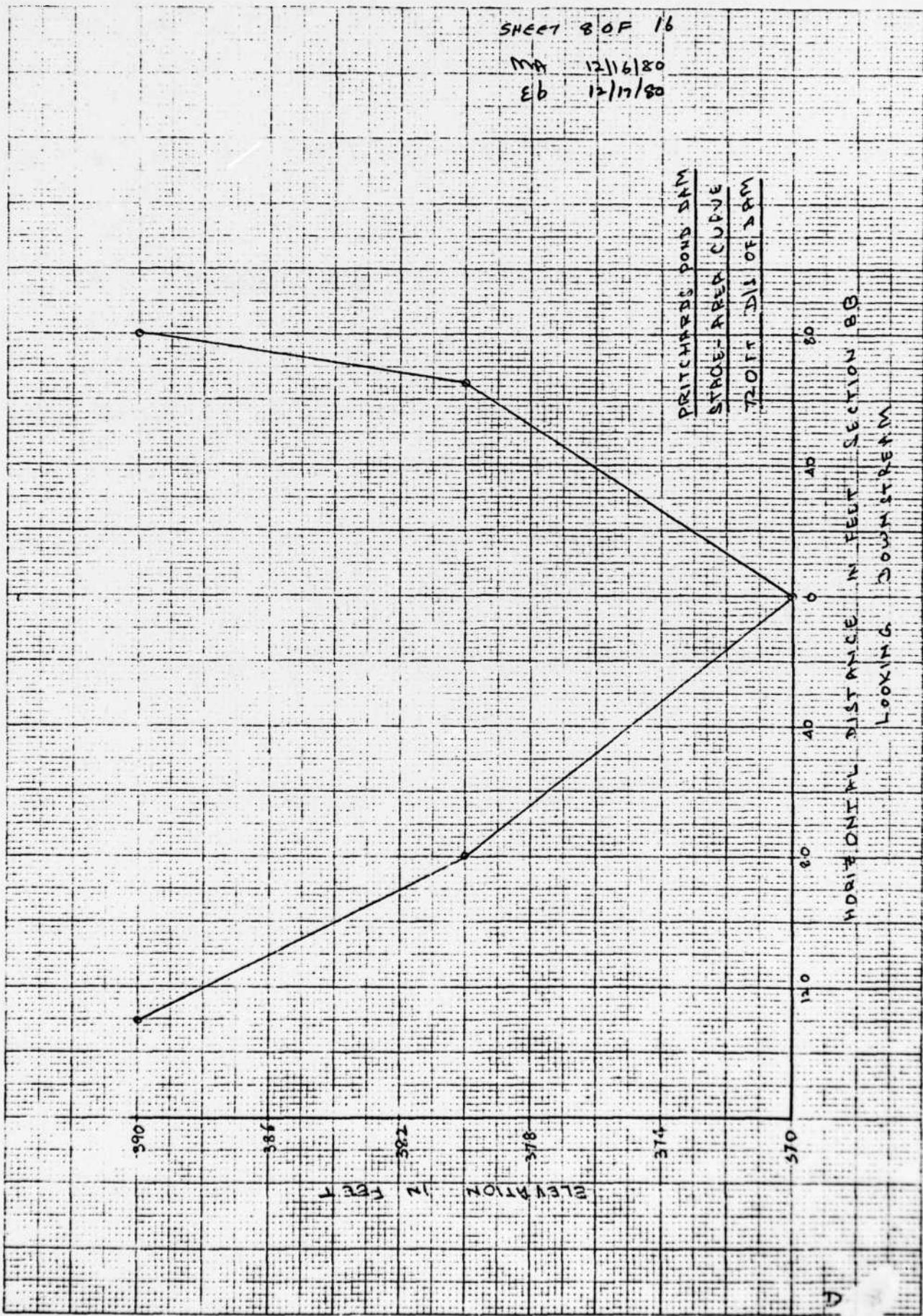
ELVN	A SQ.FT	P	R	$R^{2/3}$	Q CFS
370	0	-	-	-	-
372	29	29.3	0.99	0.99	56
374	116	58.6	1.98	1.58	356
376	261	87.9	2.97	2.07	1051
378	464	117.1	3.96	2.50	2263

FROM STAGE-AREA AND STAGE-DISCHARGE CURVES,  
FOR  $Q_P_1 = 1185$  CFS, ELVN = 376.3 AND AREA = 290 SQ.FT  
VOLUME OF REACH  $V_1 = \frac{550 \times 290}{43,560} \approx 3.7$  AC.FT.

$$\text{TRIAL } Q_P_2 = Q_P_1 \left(1 - \frac{V_1}{S}\right)$$

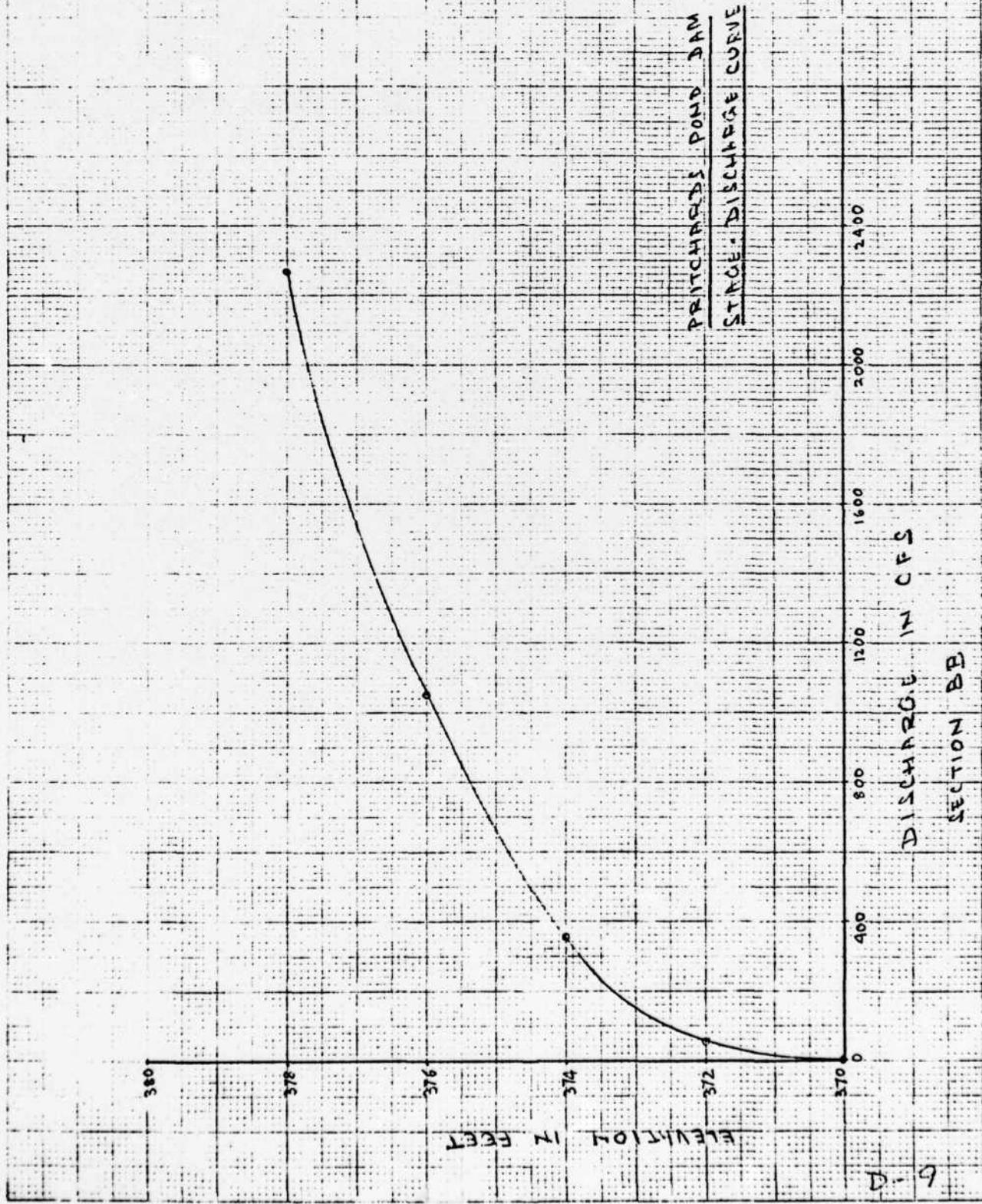
$$= 1185 \left(1 - \frac{3.7}{115}\right) = 1147 \text{ CFS}$$

FOR THIS  $Q_P_2$ , ELVN = 376.2 AND AREA = 280.5 SQ.FT.



SHEET 9 OF 16

MA 12/16/80  
EB 12/17/80



DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 10 OF 16  
 NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/80  
PRITCHARD'S POND DAM CHECKED BY SL DATE 12/17/80

$$\text{VOLUME OF REACH } V_2 = \frac{550 \times 280}{43,560} = 3.5 \text{ AC. FT.}$$

$$\text{RECOMPUTING } Q_2 = 1185 \left(1 - \frac{3.7+3.5}{115}\right) = 1148 \text{ CFS}$$

$$\text{FLOOD STAGE} = 376.2 \text{ NAVD}$$

$$\text{FLOOD DEPTH} = 6.2 \text{ FT.}$$

$$\text{VELOCITY} = \frac{1148}{280} = 4.1 \text{ FPS}$$

THE TWO HOUSES ADJACENT TO THE SMALL POND LOCATED AT SECTION BB ARE HIGHER THAN THE ESTIMATED FLOOD STAGE; THEREFORE ARE NOT LIKELY TO BE IMPACTED BY DAM FAILURE.

SECTION CC

THIS SECTION IS SELECTED 1600' DIS FROM SECTION BB USING MANNING'S EQUATION

$$Q = \frac{1.486}{m} A R^{2/3} S^{1/2} \quad \text{WHERE } m = 0.08 \text{ ASSUMED}$$

$$= 2.63 A R^{2/3} S^{1/2} \quad \text{AND } S = 0.02 \text{ EST. FROM USGS MAP}$$

ELVN	ASZ.FT.	P	R	$R^{2/3}$	Q CFS
334	0	—	—	—	—
336	60	60	1	1	160
338	240	120	2	1.6	1010
340	525	175	3	2.08	2870

FOR PEAK FAILURE OUTFLOW  $Q_P = 1148 \text{ CFS}$

ELVN FROM STAGE-DISCHARGE CURVE = 338.2

AND STAGE AREA CURVE GIVES AREA = 262 SQ.FT.

FOR A REACH LENGTH OF 2000 FT.,

$$V_1 = \frac{2000 \times 262}{43,560} \approx 12 \text{ AC. FT.}$$

DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 11 OF 16  
NEW ENGLAND DIVISION COMPUTED BY M.F. DATE 12/16/80  
PRITCHARDS POND DAM CHECKED BY DATE

$$\text{TRIAL } QP_2 = QP_1 \left(1 - \frac{V_1}{S}\right)$$

$$= 1148 \left(1 - \frac{12}{115}\right) = 1028 \text{ CFS}$$

FOR THIS  $QP_2$  ELVN FROM DISCHARGE CURVE

= 338.05 AND AREA = 24359. FT.

$$\text{VOLUME OF REACH } V_2 = \frac{2000 \times 243}{43.560} \approx 11.2 \text{ AC.FT.}$$

$$\text{RECOMPUTING } QP_2 = 1148 \left(1 - \frac{12 \times 11.2}{115}\right) = 1032 \text{ CFS}$$

FLOOD STAGE

= 338.1 NGVD

FLOOD DEPTH

= 4.1 FT.

VELOCITY

=  $\frac{1032}{243} = 4.25 \text{ FPS}$

NO DAMAGE IS EXPECTED TO OCCUR  
IN THIS REACH.

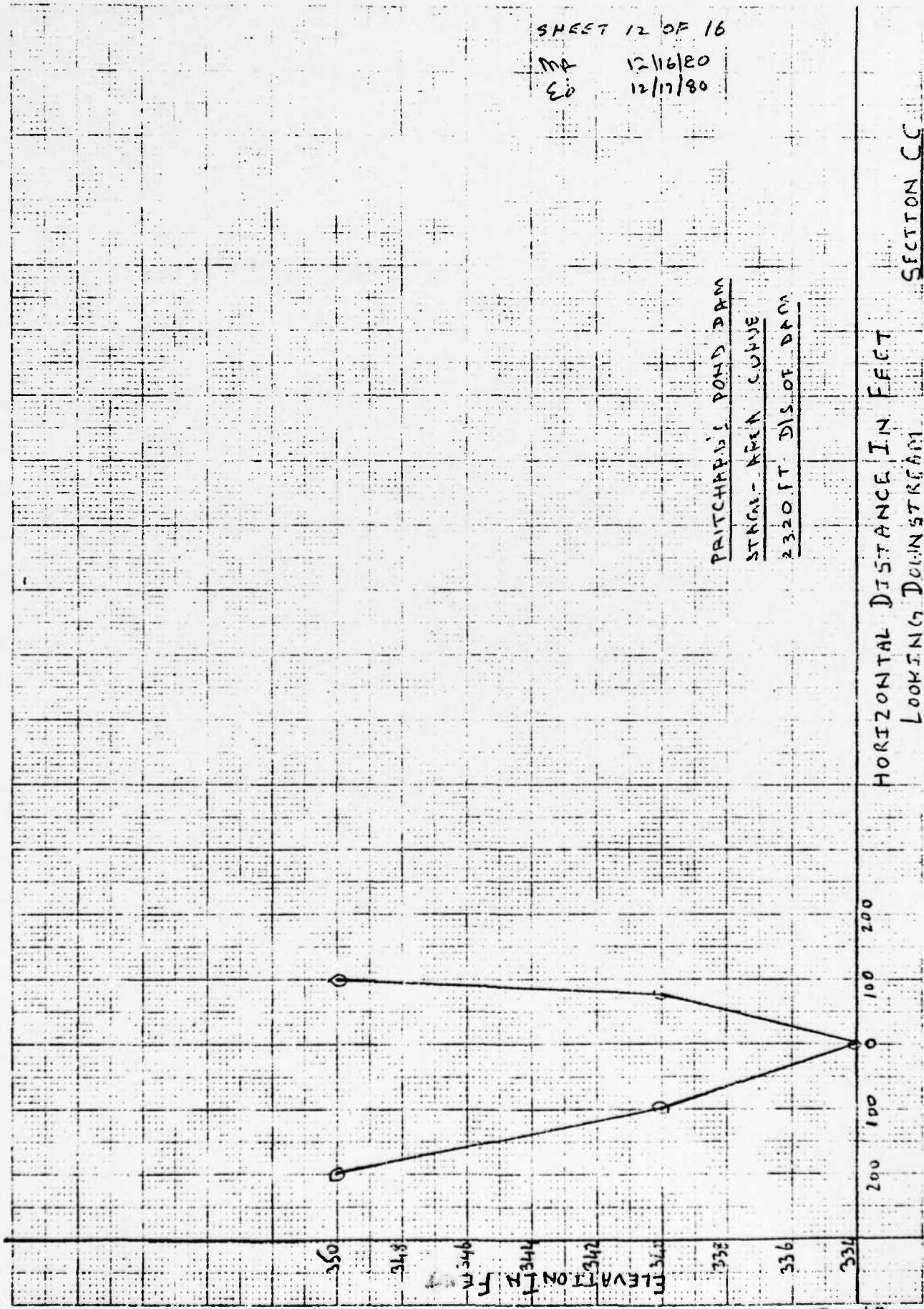
SHEET 12 OF 16

MP  
E6

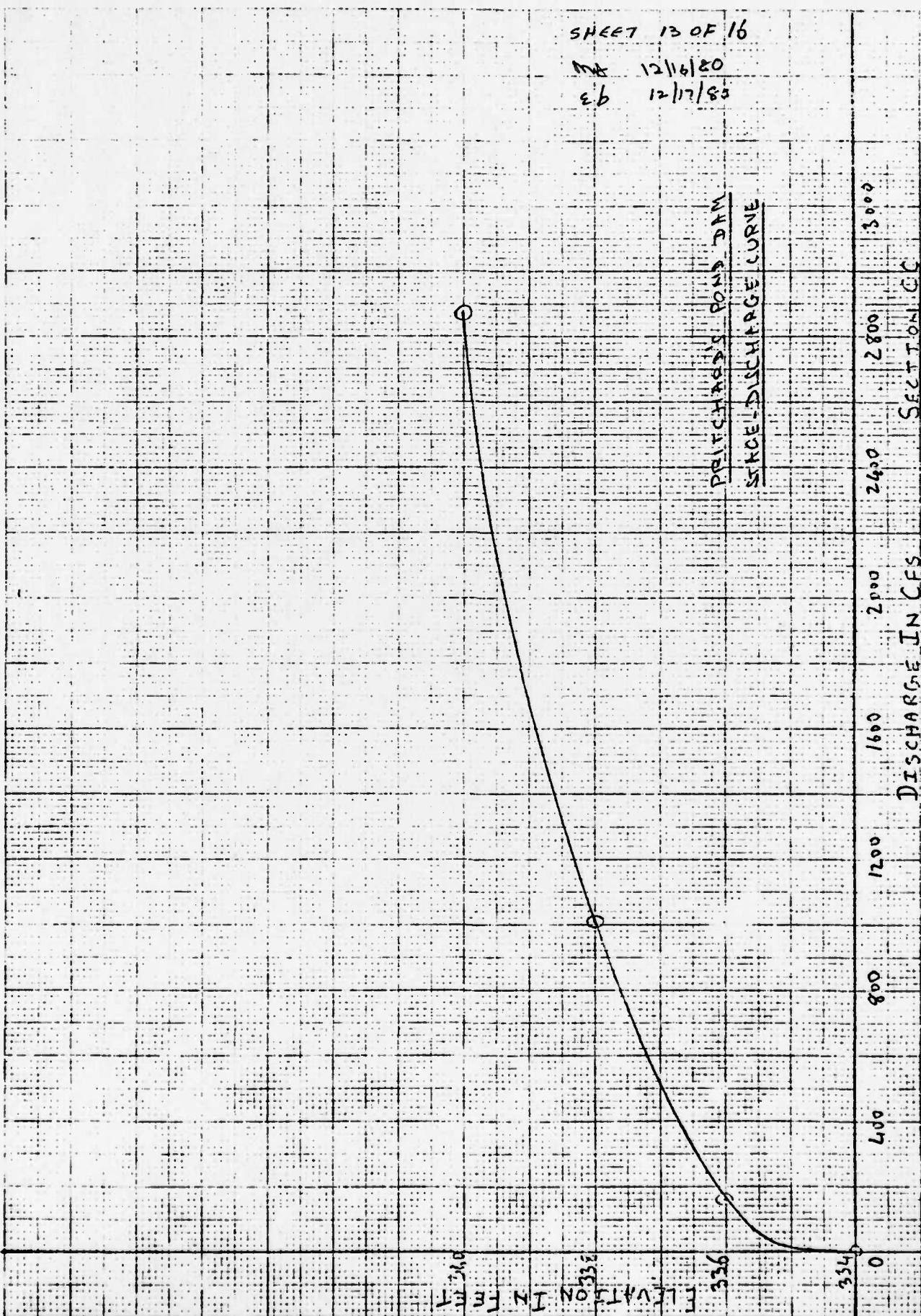
12/16/80  
12/17/80

PITCHING POINT DAM  
STAGNATION CURVE  
2320 FT DIS OF DRAWS

HORIZONTAL DISTANCE IN EFFECT  
LOOKING DOWNSTREAM  
SECTION C-C



D-12



DIVERSIFIED TECHNOLOGIES CORP. CONSULTING ENGINEERS  
NORTH HAVEN, CONN.

PROJECT NON FEDERAL DAM INSPECTION PROJECT NO. 80-13-11 SHEET 14 OF 16  
NEW ENGLAND DIVISION COMPUTED BY MA DATE 12/16/80  
PRITCHARD'S POND DAM CHECKED BY cb DATE 12/17/80

SECTION DD IS SELECTED 950' DIS OF CC  
ADJACENT TO MERRITT STREET.  
USING MANNING'S EQUATION

$$Q = \frac{1.486}{m} \times A \times R^{2/3} \times S^{1/2} \quad \text{WHERE } m = 0.06 \text{ ASSUMED}$$

$$A = 0.014 \text{ EST. FROM}$$

$$= 2.93 \times A \times R^{2/3} \quad \text{USGS MAP}$$

ELVN	A SQ.FT	P	R	$R^{2/3}$	Q CFS
323	0	—	—	—	—
324	26	52	0.5	0.63	48
325	100	100	1	1	293
326	231	154	1.5	1.31	886
327	400	200	2	1.6	1,875

FOR PEAK FAILURE OUTFLOW  $Q_P$  = 1032 CFS, THE STAGE  
DISCHARGE CURVE GIVES ELVN = 326.18 AND AREA  
= 270 SQ.FT.

FOR A REACH LENGTH OF 200FT,

$$\text{VOLUME OF REACH } V_1 = \frac{200 \times 270}{43,560} \approx 1.2 \text{ AC.FT.}$$

$$\text{TRIAL } Q_P = Q_P (1 - \frac{V_1}{S})$$

$$= 1032 \left(1 - \frac{1.2}{11.5}\right) = 1021 \text{ CFS}$$

FOR THIS  $Q_P$  ELVN = 326.16 AND AREA = 264 SQ.FT.

$$\text{VOLUME OF REACH } V_2 = \frac{200 \times 264}{43,560} \approx 1.2 \text{ AC.FT.}$$

∴ PEAK OUTFLOW  $Q_P$  = 1021 CFS.

FLOOD STAGE  $\approx 326.2 \text{ NGVD}$

FLOOD DEPTH  $\approx 3.2 \text{ FT.}$

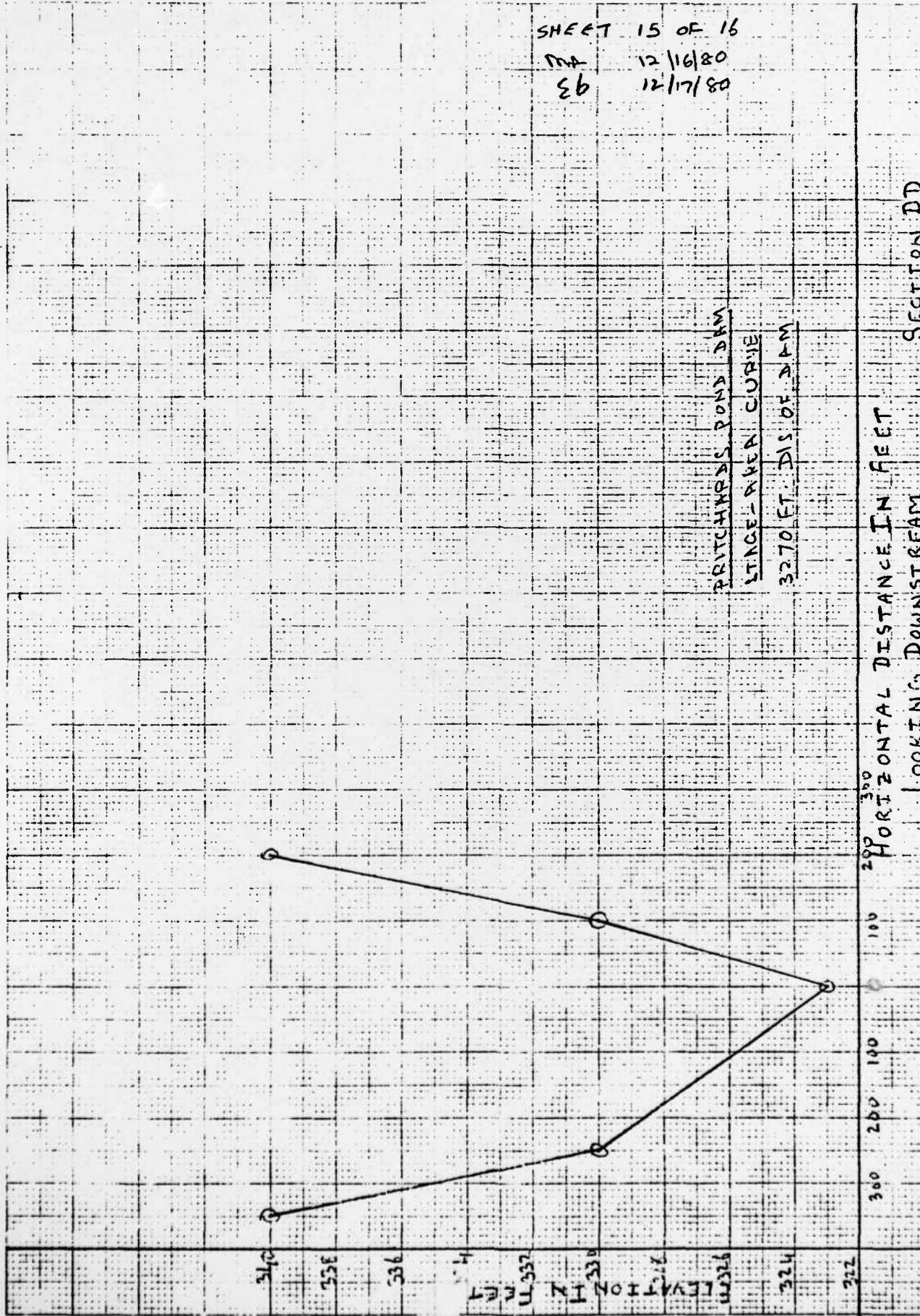
VELOCITY  $= \frac{1021}{264} \approx 3.9 \text{ FPS}$

THE HOUSES IN THIS VICINITY ARE 5' FT ABOVE  
THE BED OF THE BROOK.

SHEET 15 OF 16  
MAP  
S6  
12/16/80  
12/17/80

PRITCHARD RIVER DAM  
LINE - AKA CURVE  
3270 FT. DIS OF RIVER

<sup>290</sup> HORIZONTAL DISTANCE IN FEET  
LOOKING DOWNSTREAM  
SECTION DD



SHEET 16 OF 16

RA 12/16/80

EB 12/17/80

PRITCHARD POND DAM  
STAGE DISCHARGE CURVE

DISCHARGES IN CFS SECTION D

1200 1600 2000 2400

800

400

0

12 16 20 24 28 32 36  
ELEVATION FEET

D-16

**APPENDIX E**  
**VISUAL CHECK LIST WITH COMMENTS**

VISUAL INSPECTION CHECK LIST  
PARTY ORGANIZATION

PROJECT PRITCHARD's POND DAM

DATE December 3, 1980

TIME 8-10:30 a.m.

WEATHER Overcast, 33°F.

W.S. ELEV. \_\_\_\_\_ U.S. \_\_\_\_\_ DN.S

PARTY:

1. Walt Gancarz - Genovese 6. \_\_\_\_\_
2. Mark Ballou - Genovese 7. \_\_\_\_\_
3. Murali Atluru - DTC 8. \_\_\_\_\_
4. Richard F. Murdock - GEI 9. \_\_\_\_\_
5. Richard W. Turnbull - GEI 10. \_\_\_\_\_

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Embankment</u>	<u>All</u>	
2. <u>Outlet works</u>	<u>All</u>	
3. <u>Spillway</u>	<u>All</u>	
4. _____		
5. _____		
6. _____		
7. _____		
8. _____		
9. _____		
10. _____		

**PERIODIC INSPECTION CHECK LIST**

PROJECT PRITCHARD'S POND DAM

DATE December 3, 1980

PROJECT FEATURE Dam Embankment

NAME \_\_\_\_\_

DISCIPLINE Geotechnical, Civil/Str.

NAME WG, RFM, RWT

AREA EVALUATED	CONDITIONS
<u>DAM EMBANKMENT</u>	
Crest Elevation	Earth embankment with downstream cut stone masonry wall. 386.7
Current Pool Elevation	382.5
Maximum Impoundment to Date	None observed.
Surface Cracks	Asphalt pavement moderately cracked.
Pavement Condition	Minor undulations of crest surface.
Movement or Settlement of Crest	None observed.
Lateral Movement	Good.
Vertical Alignment	Good.
Horizontal Alignment	Two trees near right abutment (12 in. and 36 in. diameter).
Condition at Abutment and at Concrete Structures	None observed.
Indications of Movement of Structural Items on Slopes	Footpath and scattered trash on upstream slope.
Trespassing on Slopes	Minor sloughs and erosion gullies on upstream slope of embankment.
Sloughing or Erosion of Slopes or Abutments	No slope protection.
Rock Slope Protection - Riprap Failures	None observed.
Unusual Movement or Cracking at or near Toes	Wet area and minor seepage observed on left floodplain about 50 ft. downstream of embankment. Minor seepage from stone masonry wall, adjacent to outlet pipe.
Unusual Embankment or Downstream Seepage	None observed.
Piping or Boils	None observed.
Foundation Drainage Features	None observed.
Toe Drains	None observed.
Instrumentation System	None.
Vegetation	Scattered trees, light brush and grass on crest and upstream slope.

## PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980PROJECT FEATURE Dike Embankment NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_ NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>DIKE EMBANKMENT</u> Crest Elevation. Current Pool Elevation Maximum Impoundment to Date Surface Cracks Pavement Condition Movement or Settlement of Crest Lateral Movement Vertical Alignment Horizontal Alignment Condition at Abutment and at Concrete Structures Indications of Movement of Structural Items on Slopes Trespassing on Slopes Sloughing or Erosion of Slopes or Abutments Rock Slope Protection - Riprap Failures Unusual Movement or Cracking at or near Toes Unusual Embankment or Downstream Seepage Piping or Boils Foundation Drainage Features Toe Drains Instrumentation System Vegetation	None.

## PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAM DATE December 3, 1980PROJECT FEATURE Outlet Works- Intake NAME \_\_\_\_\_DISCIPLINE Civil/Str. NAME WG

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u>	
a. Approach Channel	Not visible (under water).
Slope Conditions	
Bottom Conditions	
Rock Slides or Falls	
Log Boom	
Debris	
Condition of Concrete Lining	
Drains or Weep Holes	
b. Intake Structure	
Condition of Concrete	Poor.
Stop Logs and Slots	Clogged with debris - no longer working

## PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAMDATE December 3, 1980PROJECT FEATURE Outlet Works - Control Tower NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - CONTROL TOWER</u>	None observed.
a. Concrete and Structural	
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System	

1  
PERIODIC INSPECTION CHECK LISTPROJECT PRITCHARD'S POND DAMDATE December 3, 1980PROJECT FEATURE Outlet Works - Conduit

NAME \_\_\_\_\_

DISCIPLINE Civil/Str.NAME WG

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - TRANSITION AND CONDUIT</u>  General Condition of Concrete Rust or Staining on Concrete Spalling Erosion or Cavitation Cracking Alignment of Monoliths Alignment of Joints Numbering of Monoliths	6" Cast Iron Pipe protruding from d/s face of dam.

## PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAMDATE December 3, 1980PROJECT FEATURE Outlet Works - Str. /Channel

NAME \_\_\_\_\_

DISCIPLINE GeotechnicalNAME REM. RWT

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	
General Condition of Concrete	
Rust or Staining	
Spalling	
Erosion or Cavitation	
Visible Reinforcing	
Any Seepage or Efflorescence	
Condition at Joints	
Drain holes	None observed.
Channel	Banks lined with stone wall.
Loose Rock or Trees Overhanging Channel	Parts of stone wall bank liner are loose
Condition of Discharge Channel	Partially blocked with cluster of 5 trees joined at base (6"-8" diameter), and by several boulders which have fallen off left bank wall into discharge channel

**PERIODIC INSPECTION CHECK LIST**

PROJECT PRITCHARD'S POND DAM

DATE December 3, 1980

PROJECT FEATURE Outlet Works- Weir

NAME \_\_\_\_\_

DISCIPLINE Civil/Str, Hydraulic

NAME WG, MA

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>	
a. Approach Channel	Not Visible (under water)
General Condition	
Loose Rock Overhanging Channel	
Trees Overhanging Channel	
Floor of Approach Channel	
b. Weir and Training Walls	Good. trash rack is clogged with debris
General Condition of Concrete	
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	Parts of stone wall are loose
Trees Overhanging Channel	Yes - 5 trees immediately d/s of outlet.
Floor of Channel	Clear (except for trees)
Other Obstructions	No

## PERIODIC INSPECTION CHECK LIST

PROJECT PRITCHARD'S POND DAMDATE December 3, 1980PROJECT FEATURE Outlet works - Service Bridge

NAME \_\_\_\_\_

DISCIPLINE \_\_\_\_\_

NAME \_\_\_\_\_

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SERVICE BRIDGE</u> a. Super Structure Bearings Anchor Bolts Bridge Seat Longitudinal Members Under Side of Deck Secondary Bracing Deck Drainage System Railings Expansion Joints Paint l. Abutment & Piers General Condition of Concrete Alignment of Abutment Approach to Bridge Condition of Seat & Backwall	None observed.

END

FILMED

9-84

DTIC